



## SEQUENCE LISTING

&lt;110&gt; Curtis, Rory A.J.

<120> 52906, 33408, AND 12189, NOVEL POTASSIUM  
CHANNEL FAMILY MEMBERS AND USES THEREOF

&lt;130&gt; 10448-061001

&lt;150&gt; US 60/209,845

&lt;151&gt; 2000-06-06

&lt;160&gt; 13

&lt;170&gt; FastSEQ for Windows Version 4.0

&lt;210&gt; 1

&lt;211&gt; 3525

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (638) ... (3178)

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Met Pro Ile Val Leu Val

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RECEIVED

JAN 30 2003

TECH CENTER 1600/2900

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Tyr	Leu	Ile	Ala	Arg	Val	Met	Leu	Leu	His	Ser	Lys	Leu	Phe	Thr	Asp		
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ata	gat	cat	gca	aaa	gta	aga	aaa	cat	caa	cga	aaa	ttc	ctg	caa	gct	2815	
Ile	Asp	His	Ala	Lys	Val	Arg	Lys	His	Gln	Arg	Lys	Phe	Leu	Gln	Ala		
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Gln	Ala	Asn	Thr	Leu	Val	Asp	Leu	Ala	Lys	Thr	Gln	Asn	Ile	Met	Tyr		

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775	780	785	790
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Phe Ile Glu Ala Gln Met Glu Ser Tyr Asp Lys His Val Thr Tyr Asn			
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Ala Glu Arg Ser Arg Ser Ser Ser Arg Arg Arg Arg Ser Ser Ser Thr			
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Ala Pro Pro Thr Ser Ser Glu Ser Ser			
840	845		
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Pro Leu Pro Thr Ile Thr His Cys Ala Gly Cys Thr Thr Ala Trp Ser			
35	40	45	
Pro Cys Ser Phe Asn Ser Pro Asp Met Glu Thr Pro Leu Gln Phe Gln			
50	55	60	
Arg Gly Phe Phe Pro Glu Gln Pro Pro Pro Pro Pro Arg Ser Ser His			
65	70	75	80
Leu His Cys Gln Gln Gln Gln Gln Ser Gln Asp Lys Pro Cys Pro Pro			
85	90	95	
Phe Ala Pro Leu Pro His Pro His His His Pro His Leu Ala His Gln			
100	105	110	
Gln Pro Ala Ser Gly Gly Ser Ser Pro Cys Leu Arg Cys Asn Ser Cys			
115	120	125	
Ala Ser Ser Gly Ala Pro Ala Ala Gly Ala Gly Asp Asn Leu Ser Leu			
130	135	140	

Leu Leu Arg Thr Ser Ser Pro Gly Gly Ala Phe Arg Thr Arg Thr Ser  
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 Ser Pro Leu Ser Gly Ser Ser Cys Cys Cys Cys Cys Cys Ser Ser Arg  
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 Arg Gly Ser Gln Leu Asn Val Ser Glu Leu Thr Pro Ser Ser His Ala  
 180 185 190  
 Ser Ala Leu Arg Gln Gln Tyr Ala Gln Gln Ser Ala Gln Gln Ser Ala  
 195 200 205  
 Ser Ala Ser Gln Tyr His Gln Cys His Ser Leu Gln Pro Ala Ala Ser  
 210 215 220  
 Pro Thr Gly Ser Leu Gly Ser Leu Gly Ser Gly Pro Pro Leu Ser His  
 225 230 235 240  
 His His His His Pro His Pro Ala His His Gln His His Gln Pro Gln  
 245 250 255  
 Ala Arg Arg Glu Ser Asn Pro Phe Thr Glu Ile Ala Met Ser Ser Cys  
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 Arg Tyr Asn Gly Gly Val Met Arg Pro Leu Ser Asn Leu Ser Ala Ser  
 275 280 285  
 Arg Arg Asn Leu His Glu Met Asp Ser Glu Ala Gln Pro Leu Gln Pro  
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 Pro Ala Ser Val Gly Gly Gly Gly Gly Ala Ser Ser Pro Ser Ala Ala  
 305 310 315 320  
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 325 330 335  
 Ser Lys Pro Glu His Asn Asn Ser Asn Asn Leu Ala Leu Tyr Gly Thr  
 340 345 350  
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 355 360 365  
 His Gly Ser Ser Ser Gly Thr Lys Ser Ser Lys Lys Lys Asn Gln Asn  
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 385 390 395 400  
 Arg Leu Ser Asp Tyr Ala Leu Ile Phe Gly Met Phe Gly Ile Val Val  
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 Met Val Ile Glu Thr Glu Leu Ser Trp Gly Ala Tyr Asp Lys Ala Ser  
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 435 440 445  
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 Met Val Asp Asn Gly Ala Asp Asp Trp Arg Ile Ala Met Thr Tyr Glu  
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 485 490 495  
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 Pro Met Phe Leu Arg Leu Tyr Leu Ile Ala Arg Val Met Leu Leu His  
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 Ser Lys Leu Phe Thr Asp Thr Ser Ser Arg Ser Ile Gly Ala Leu Asn  
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 Lys Ile Asn Phe Asn Thr Arg Phe Val Met Lys Thr Leu Met Thr Ile  
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 Cys Pro Gly Thr Val Leu Leu Val Phe Ser Ile Ser Leu Trp Ile Ile  
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 Ala Ala Trp Thr Val Arg Ala Cys Glu Arg Tyr His Asp Gln Gln Asp

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Leu Ser Ile Gly Tyr Gly Asp Met Val Pro Asn Thr Tyr Cys Gly Lys		
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Val Val Ala Val Val Ala Arg Lys Leu Glu Leu Thr Lys Ala Glu Lys		
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His Val His Asn Phe Met Met Asp Thr Gln Leu Thr Lys Arg Val Lys		
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Thr Lys Leu Val Lys Lys Ile Asp His Ala Lys Val Arg Lys His Gln		
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Arg Lys Phe Leu Gln Ala Ile His Gln Leu Arg Ser Val Lys Met Glu		
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Gln Arg Lys Leu Asn Asp Gln Ala Asn Thr Leu Val Asp Leu Ala Lys		
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Thr Gln Asn Ile Met Tyr Asp Met Ile Ser Asp Leu Asn Glu Arg Ser		
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Glu Asp Phe Glu Lys Arg Ile Val Thr Leu Glu Thr Lys Leu Glu Thr		
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&lt;210&gt; 3

&lt;211&gt; 2544

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3

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tcttctcttc cactttttcc tcctcttctt ccacttctt tgccctgcac cccccctccc 240
ccgcgcggga tcctggccgc tgctctccag acccagg atg ccg ggg ggc aag aga 295
                                Met Pro Gly Gly Lys Arg
                                1 5

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ggg ctg gtg gca ccg cag aac aca ttt ttg gag aac atc gtc agg cgc 343
Gly Leu Val Ala Pro Gln Asn Thr Phe Leu Glu Asn Ile Val Arg Arg
          10                15                20

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tcc agt gaa tca agt ttc tta ctg gga aat gcc cag att gtg gat tgg 391
Ser Ser Glu Ser Ser Phe Leu Leu Gly Asn Ala Gln Ile Val Asp Trp
          25                30                35

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cct gta gtt tat agt aat gac ggt ttt tgt aaa ctc tct gga tat cat 439
Pro Val Val Tyr Ser Asn Asp Gly Phe Cys Lys Leu Ser Gly Tyr His
          40                45                50

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```

cga gct gac gtc atg cag aaa agc agc act tgc agt ttt atg tat ggg 487
Arg Ala Asp Val Met Gln Lys Ser Ser Thr Cys Ser Phe Met Tyr Gly

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55	60	65	70	
gaa ttg act gac aag aag acc att gag aaa gtc agg caa act ttt gac				535
Glu Leu Thr Asp Lys Lys Thr Ile Glu Lys Val Arg Gln Thr Phe Asp	75	80	85	
aac tac gaa tca aac tgc ttt gaa gtt ctt ctg tac aag aaa aac aga				583
Asn Tyr Glu Ser Asn Cys Phe Glu Val Leu Leu Tyr Lys Lys Asn Arg	90	95	100	
acc cct gtt tgg ttt tat atg caa att gca cca ata aga aat gaa cat				631
Thr Pro Val Trp Phe Tyr Met Gln Ile Ala Pro Ile Arg Asn Glu His	105	110	115	
gaa aag gtg gtc ttg ttc ctg tgt act ttc aag gat att acg ttg ttc				679
Glu Lys Val Val Leu Phe Leu Cys Thr Phe Lys Asp Ile Thr Leu Phe	120	125	130	
aaa cag cca ata gag gat gat tca aca aaa ggt tgg acg aaa ttt gcc				727
Lys Gln Pro Ile Glu Asp Asp Ser Thr Lys Gly Trp Thr Lys Phe Ala	135	140	145	150
cga ttg aca cgg gct ttg aca aat agc cga agt gtt ttg cag cag ctc				775
Arg Leu Thr Arg Ala Leu Thr Asn Ser Arg Ser Val Leu Gln Gln Leu	155	160	165	
acg cca atg aat aaa aca gag gtg gtc cat aaa cat tca aga cta gct				823
Thr Pro Met Asn Lys Thr Glu Val Val His Lys His Ser Arg Leu Ala	170	175	180	
gaa gtt ctt cag ctg gga tca gat atc ctt cct cag tat aaa caa gaa				871
Glu Val Leu Gln Leu Gly Ser Asp Ile Leu Pro Gln Tyr Lys Gln Glu	185	190	195	
gcg cca aag acg cca cca cac att att tta cat tat tgt gct ttt aaa				919
Ala Pro Lys Thr Pro Pro His Ile Ile Leu His Tyr Cys Ala Phe Lys	200	205	210	
act act tgg gat tgg gtg att tta att ctt acc ttc tac acc gcc att				967
Thr Thr Trp Asp Trp Val Ile Leu Ile Leu Thr Phe Tyr Thr Ala Ile	215	220	225	230
atg gtt cct tat aat gtt tcc ttc aaa aca aag cag aac aac ata gcc				1015
Met Val Pro Tyr Asn Val Ser Phe Lys Thr Lys Gln Asn Asn Ile Ala	235	240	245	
tgg ctg gta ctg gat agt gtg gtg gac gtt att ttt ctg gtt gac atc				1063
Trp Leu Val Leu Asp Ser Val Val Asp Val Ile Phe Leu Val Asp Ile	250	255	260	
gtt tta aat ttt cac acg act ttc gtg ggg ccc ggt gga gag gtc att				1111
Val Leu Asn Phe His Thr Thr Phe Val Gly Pro Gly Gly Glu Val Ile	265	270	275	
tct gac cct aag ctc ata agg atg aac tat ctg aaa act tgg ttt gtg				1159
Ser Asp Pro Lys Leu Ile Arg Met Asn Tyr Leu Lys Thr Trp Phe Val	280	285	290	

atc gat ctg ctg tct tgt tta cct tat gac atc atc aat gcc ttt gaa Ile Asp Leu Leu Ser Cys Leu Pro Tyr Asp Ile Ile Asn Ala Phe Glu 295 300 305 310	1207
aat gtg gat gag gga atc agc agt ctc ttc agt tct tta aaa gtg gtg Asn Val Asp Glu Gly Ile Ser Ser Leu Phe Ser Ser Leu Lys Val Val 315 320 325	1255
cgt ctc tta cga ctg ggc cgt gtg gct agg aaa ctg gac cat tac cta Arg Leu Leu Arg Leu Gly Arg Val Ala Arg Lys Leu Asp His Tyr Leu 330 335 340	1303
gaa tat gga gca gca gtc ctc gtg ctc ctg gtg tgt gtg ttt gga ctg Glu Tyr Gly Ala Ala Val Leu Val Leu Leu Val Cys Val Phe Gly Leu 345 350 355	1351
gtg gcc cac tgg ctg gcc tgc ata tgg tat agc atc gga gac tac gag Val Ala His Trp Leu Ala Cys Ile Trp Tyr Ser Ile Gly Asp Tyr Glu 360 365 370	1399
gtc att gat gaa gtc act aac acc atc caa ata gac agt tgg ctc tac Val Ile Asp Glu Val Thr Asn Thr Ile Gln Ile Asp Ser Trp Leu Tyr 375 380 385 390	1447
cag ctg gct ttg agc att ggg act cca tat cgc tac aat acc agt gct Gln Leu Ala Leu Ser Ile Gly Thr Pro Tyr Arg Tyr Asn Thr Ser Ala 395 400 405	1495
ggg ata tgg gaa gga gga ccc agc aag gat tca ttg tac gtg tcc tct Gly Ile Trp Glu Gly Gly Pro Ser Lys Asp Ser Leu Tyr Val Ser Ser 410 415 420	1543
ctc tac ttt acc atg aca agc ctt aca acc ata gga ttt gga aac ata Leu Tyr Phe Thr Met Thr Ser Leu Thr Thr Ile Gly Phe Gly Asn Ile 425 430 435	1591
gct cct acc aca gat gtg gag aag atg ttt tcg gtg gct atg atg atg Ala Pro Thr Thr Asp Val Glu Lys Met Phe Ser Val Ala Met Met Met 440 445 450	1639
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gat atc tgt gtt cat cta aac cgg aag gtt ttt aat gaa cat cct gct Asp Ile Cys Val His Leu Asn Arg Lys Val Phe Asn Glu His Pro Ala 535 540 545 550	1927
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agt gtg gat gcc ctc tgc ttt gtg gtg tca gga tcc ttg gaa gtc atc Ser Val Asp Ala Leu Cys Phe Val Val Ser Gly Ser Leu Glu Val Ile 585 590 595	2071
cag gat gat gag gtg gtg gct att tta ggg aag ggt gat gta ttt gga Gln Asp Asp Glu Val Val Ala Ile Leu Gly Lys Gly Asp Val Phe Gly 600 605 610	2119
gac atc ttc tgg aag gaa acc acc ctt gcc cat gca tgt gcg aac gtc Asp Ile Phe Trp Lys Glu Thr Thr Leu Ala His Ala Cys Ala Asn Val 615 620 625 630	2167
cgg gca ctg acg tac tgt gac cta cac atc atc aag cgg gaa gcc ttg Arg Ala Leu Thr Tyr Cys Asp Leu His Ile Ile Lys Arg Glu Ala Leu 635 640 645	2215
ctc aaa gtc ctg gac ttt tat aca gct ttt gca aac tcc ttc tca agg Leu Lys Val Leu Asp Phe Tyr Thr Ala Phe Ala Asn Ser Phe Ser Arg 650 655 660	2263
aat ctc act ctt act tgc aat ctg agg aaa cgg atc atc ttt cgt aag Asn Leu Thr Leu Thr Cys Asn Leu Arg Lys Arg Ile Ile Phe Arg Lys 665 670 675	2311
atc agt gat gtg aag aaa gag gag gag gag cgc ctc cgg cag aag aat Ile Ser Asp Val Lys Lys Glu Glu Glu Arg Leu Arg Gln Lys Asn 680 685 690	2359
gag gtg acc ctc agc att ccc gtg gac cac cca gtc aga aag ctc ttc Glu Val Thr Leu Ser Ile Pro Val Asp His Pro Val Arg Lys Leu Phe 695 700 705 710	2407
cag aag ttc aag cag cag aag gag ctg cgg aat cag ggc tca aca cag Gln Lys Phe Lys Gln Gln Lys Glu Leu Arg Asn Gln Gly Ser Thr Gln 715 720 725	2455
ggg gac cct gag agg aac caa ctc cag gta gag agc cgc tcc tta cag Gly Asp Pro Glu Arg Asn Gln Leu Gln Val Glu Ser Arg Ser Leu Gln 730 735 740	2503
aat gga acc tcc atc acc gga acc agc gtg gtg act gtg tca cag att	2551

Asn	Gly	Thr	Ser	Ile	Thr	Gly	Thr	Ser	Val	Val	Thr	Val	Ser	Gln	Ile	
		745						750					755			
act	ccc	att	cag	acg	tct	ctg	gcc	tat	gtg	aaa	acc	agt	gaa	tcc	ctt	2599
Thr	Pro	Ile	Gln	Thr	Ser	Leu	Ala	Tyr	Val	Lys	Thr	Ser	Glu	Ser	Leu	
	760					765				770						
aag	cag	aac	aac	cgt	gat	gcc	atg	gaa	ctc	aag	ccc	aac	ggc	ggg	gct	2647
Lys	Gln	Asn	Asn	Arg	Asp	Ala	Met	Glu	Leu	Lys	Pro	Asn	Gly	Gly	Ala	
775				780					785					790		
gac	caa	aaa	tgt	ctc	aaa	gtc	aac	agc	cca	ata	aga	atg	aag	aat	gga	2695
Asp	Gln	Lys	Cys	Leu	Lys	Val	Asn	Ser	Pro	Ile	Arg	Met	Lys	Asn	Gly	
				795					800					805		
aat	gga	aaa	ggg	tgg	ctg	cga	ctc	aag	aat	aat	atg	gga	gcc	cat	gag	2743
Asn	Gly	Lys	Gly	Trp	Leu	Arg	Leu	Lys	Asn	Asn	Met	Gly	Ala	His	Glu	
			810					815					820			
gag	aaa	aag	gaa	gac	tgg	aat	aat	gtc	act	aaa	gct	gag	tca	atg	ggg	2791
Glu	Lys	Lys	Glu	Asp	Trp	Asn	Asn	Val	Thr	Lys	Ala	Glu	Ser	Met	Gly	
	825					830						835				
cta	ttg	tct	gag	gac	ccc	aag	agc	agt	gat	tca	gag	aac	agt	gtg	acc	2839
Leu	Leu	Ser	Glu	Asp	Pro	Lys	Ser	Ser	Asp	Ser	Glu	Asn	Ser	Val	Thr	
	840					845					850					
aaa	aac	cca	cta	agg	aaa	aca	gat	tct	tgt	gac	agt	gga	att	aca	aaa	2887
Lys	Asn	Pro	Leu	Arg	Lys	Thr	Asp	Ser	Cys	Asp	Ser	Gly	Ile	Thr	Lys	
855				860						865					870	
agt	gac	ctt	cgt	ttg	gat	aag	gct	ggg	gag	gcc	cga	agt	ccg	cta	gag	2935
Ser	Asp	Leu	Arg	Leu	Asp	Lys	Ala	Gly	Glu	Ala	Arg	Ser	Pro	Leu	Glu	
			875					880					885			
cac	agt	ccc	atc	cag	gct	gat	gcc	aag	cac	ccc	ttt	tat	ccc	atc	ccc	2983
His	Ser	Pro	Ile	Gln	Ala	Asp	Ala	Lys	His	Pro	Phe	Tyr	Pro	Ile	Pro	
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gag	cag	gcc	tta	cag	acc	aca	ctg	cag	gaa	gtc	aaa	cac	gaa	ctc	aaa	3031
Glu	Gln	Ala	Leu	Gln	Thr	Thr	Leu	Gln	Glu	Val	Lys	His	Glu	Leu	Lys	
		905					910					915				
gag	gac	atc	cag	ctg	ctc	agc	tgc	aga	atg	act	gcc	cta	gaa	aag	cag	3079
Glu	Asp	Ile	Gln	Leu	Leu	Ser	Cys	Arg	Met	Thr	Ala	Leu	Glu	Lys	Gln	
	920					925					930					
gtg	gca	gaa	att	tta	aaa	ata	ctg	tcg	gaa	aaa	agc	gta	ccc	cag	gcc	3127
Val	Ala	Glu	Ile	Leu	Lys	Ile	Leu	Ser	Glu	Lys	Ser	Val	Pro	Gln	Ala	
935					940					945					950	
tca	tct	ccc	aaa	tcc	caa	atg	cca	ctc	caa	gta	ccc	ccc	cag	ata	cca	3175
Ser	Ser	Pro	Lys	Ser	Gln	Met	Pro	Leu	Gln	Val	Pro	Pro	Gln	Ile	Pro	
				955					960					965		
tgt	cag	gat	att	ttt	agt	gtc	tca	agg	cct	gaa	tca	cct	gaa	tct	gac	3223
Cys	Gln	Asp	Ile	Phe	Ser	Val	Ser	Arg	Pro	Glu	Ser	Pro	Glu	Ser	Asp	

970

975

980

aaa gat gaa atc cac ttt taatatatat acatatatat ttgttaatat  
Lys Asp Glu Ile His Phe

3271

985

attaaaacag tatatacata tgtgtgtata tacagtatat acatatatat attttcactt 3331  
gctttcaaga tgatgaccac acatggattt tgatatgtaa atattgcatg tccagctgga 3391  
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&lt;210&gt; 5

&lt;211&gt; 988

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 5

Met Pro Gly Gly Lys Arg Gly Leu Val Ala Pro Gln Asn Thr Phe Leu  
1 5 10 15  
Glu Asn Ile Val Arg Arg Ser Ser Glu Ser Ser Phe Leu Leu Gly Asn  
20 25 30  
Ala Gln Ile Val Asp Trp Pro Val Val Tyr Ser Asn Asp Gly Phe Cys  
35 40 45  
Lys Leu Ser Gly Tyr His Arg Ala Asp Val Met Gln Lys Ser Ser Thr  
50 55 60  
Cys Ser Phe Met Tyr Gly Glu Leu Thr Asp Lys Lys Thr Ile Glu Lys  
65 70 75 80  
Val Arg Gln Thr Phe Asp Asn Tyr Glu Ser Asn Cys Phe Glu Val Leu  
85 90 95  
Leu Tyr Lys Lys Asn Arg Thr Pro Val Trp Phe Tyr Met Gln Ile Ala  
100 105 110  
Pro Ile Arg Asn Glu His Glu Lys Val Val Leu Phe Leu Cys Thr Phe  
115 120 125  
Lys Asp Ile Thr Leu Phe Lys Gln Pro Ile Glu Asp Asp Ser Thr Lys  
130 135 140  
Gly Trp Thr Lys Phe Ala Arg Leu Thr Arg Ala Leu Thr Asn Ser Arg  
145 150 155 160  
Ser Val Leu Gln Gln Leu Thr Pro Met Asn Lys Thr Glu Val Val His  
165 170 175  
Lys His Ser Arg Leu Ala Glu Val Leu Gln Leu Gly Ser Asp Ile Leu  
180 185 190  
Pro Gln Tyr Lys Gln Glu Ala Pro Lys Thr Pro Pro His Ile Ile Leu  
195 200 205  
His Tyr Cys Ala Phe Lys Thr Thr Trp Asp Trp Val Ile Leu Ile Leu  
210 215 220  
Thr Phe Tyr Thr Ala Ile Met Val Pro Tyr Asn Val Ser Phe Lys Thr  
225 230 235 240  
Lys Gln Asn Asn Ile Ala Trp Leu Val Leu Asp Ser Val Val Asp Val  
245 250 255  
Ile Phe Leu Val Asp Ile Val Leu Asn Phe His Thr Thr Phe Val Gly  
260 265 270  
Pro Gly Gly Glu Val Ile Ser Asp Pro Lys Leu Ile Arg Met Asn Tyr  
275 280 285  
Leu Lys Thr Trp Phe Val Ile Asp Leu Leu Ser Cys Leu Pro Tyr Asp  
290 295 300  
Ile Ile Asn Ala Phe Glu Asn Val Asp Glu Gly Ile Ser Ser Leu Phe

305					310				315				320				
Ser	Ser	Leu	Lys	Val	Val	Arg	Leu	Leu	Arg	Leu	Gly	Arg	Val	Ala	Arg		
				325					330					335			
Lys	Leu	Asp	His	Tyr	Leu	Glu	Tyr	Gly	Ala	Ala	Val	Leu	Val	Leu	Leu		
				340					345					350			
Val	Cys	Val	Phe	Gly	Leu	Val	Ala	His	Trp	Leu	Ala	Cys	Ile	Trp	Tyr		
				355					360					365			
Ser	Ile	Gly	Asp	Tyr	Glu	Val	Ile	Asp	Glu	Val	Thr	Asn	Thr	Ile	Gln		
				370					375					380			
Ile	Asp	Ser	Trp	Leu	Tyr	Gln	Leu	Ala	Leu	Ser	Ile	Gly	Thr	Pro	Tyr		
385					390					395					400		
Arg	Tyr	Asn	Thr	Ser	Ala	Gly	Ile	Trp	Glu	Gly	Gly	Pro	Ser	Lys	Asp		
				405					410					415			
Ser	Leu	Tyr	Val	Ser	Ser	Leu	Tyr	Phe	Thr	Met	Thr	Ser	Leu	Thr	Thr		
				420					425					430			
Ile	Gly	Phe	Gly	Asn	Ile	Ala	Pro	Thr	Thr	Asp	Val	Glu	Lys	Met	Phe		
				435					440					445			
Ser	Val	Ala	Met	Met	Met	Val	Gly	Ser	Leu	Leu	Tyr	Ala	Thr	Ile	Phe		
				450					455					460			
Gly	Asn	Val	Thr	Thr	Ile	Phe	Gln	Gln	Met	Tyr	Ala	Asn	Thr	Asn	Arg		
465					470					475					480		
Tyr	His	Glu	Met	Leu	Asn	Asn	Val	Arg	Asp	Phe	Leu	Lys	Leu	Tyr	Gln		
				485					490					495			
Val	Pro	Lys	Gly	Leu	Ser	Glu	Arg	Val	Met	Asp	Tyr	Ile	Val	Ser	Thr		
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Trp	Ser	Met	Ser	Lys	Gly	Ile	Asp	Thr	Glu	Lys	Val	Leu	Ser	Ile	Cys		
				515					520					525			
Pro	Lys	Asp	Met	Arg	Ala	Asp	Ile	Cys	Val	His	Leu	Asn	Arg	Lys	Val		
				530					535					540			
Phe	Asn	Glu	His	Pro	Ala	Phe	Arg	Leu	Ala	Ser	Asp	Gly	Cys	Leu	Arg		
545					550					555					560		
Ala	Leu	Ala	Val	Glu	Phe	Gln	Thr	Ile	His	Cys	Ala	Pro	Gly	Asp	Leu		
				565					570					575			
Ile	Tyr	His	Ala	Gly	Glu	Ser	Val	Asp	Ala	Leu	Cys	Phe	Val	Val	Ser		
				580					585					590			
Gly	Ser	Leu	Glu	Val	Ile	Gln	Asp	Asp	Glu	Val	Val	Ala	Ile	Leu	Gly		
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Lys	Gly	Asp	Val	Phe	Gly	Asp	Ile	Phe	Trp	Lys	Glu	Thr	Thr	Leu	Ala		
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His	Ala	Cys	Ala	Asn	Val	Arg	Ala	Leu	Thr	Tyr	Cys	Asp	Leu	His	Ile		
625					630					635					640		
Ile	Lys	Arg	Glu	Ala	Leu	Leu	Lys	Val	Leu	Asp	Phe	Tyr	Thr	Ala	Phe		
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Ala	Asn	Ser	Phe	Ser	Arg	Asn	Leu	Thr	Leu	Thr	Cys	Asn	Leu	Arg	Lys		
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Arg	Ile	Ile	Phe	Arg	Lys	Ile	Ser	Asp	Val	Lys	Lys	Glu	Glu	Glu	Glu		
				675					680					685			
Arg	Leu	Arg	Gln	Lys	Asn	Glu	Val	Thr	Leu	Ser	Ile	Pro	Val	Asp	His		
				690					695					700			
Pro	Val	Arg	Lys	Leu	Phe	Gln	Lys	Phe	Lys	Gln	Gln	Lys	Glu	Leu	Arg		
705					710					715					72		

Lys Thr Ser Glu Ser Leu Lys Gln Asn Asn Arg Asp Ala Met Glu Leu  
 770 775 780  
 Lys Pro Asn Gly Gly Ala Asp Gln Lys Cys Leu Lys Val Asn Ser Pro  
 785 790 795 800  
 Ile Arg Met Lys Asn Gly Asn Gly Lys Gly Trp Leu Arg Leu Lys Asn  
 805 810 815  
 Asn Met Gly Ala His Glu Glu Lys Lys Glu Asp Trp Asn Asn Val Thr  
 820 825 830  
 Lys Ala Glu Ser Met Gly Leu Leu Ser Glu Asp Pro Lys Ser Ser Asp  
 835 840 845  
 Ser Glu Asn Ser Val Thr Lys Asn Pro Leu Arg Lys Thr Asp Ser Cys  
 850 855 860  
 Asp Ser Gly Ile Thr Lys Ser Asp Leu Arg Leu Asp Lys Ala Gly Glu  
 865 870 875 880  
 Ala Arg Ser Pro Leu Glu His Ser Pro Ile Gln Ala Asp Ala Lys His  
 885 890 895  
 Pro Phe Tyr Pro Ile Pro Glu Gln Ala Leu Gln Thr Thr Leu Gln Glu  
 900 905 910  
 Val Lys His Glu Leu Lys Glu Asp Ile Gln Leu Leu Ser Cys Arg Met  
 915 920 925  
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 930 935 940  
 Lys Ser Val Pro Gln Ala Ser Ser Pro Lys Ser Gln Met Pro Leu Gln  
 945 950 955 960  
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 965 970 975  
 Glu Ser Pro Glu Ser Asp Lys Asp Glu Ile His Phe  
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&lt;210&gt; 6

&lt;211&gt; 2967

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 6

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accacagatg tggagaagat gttttcgggtg gctatgatga tgggttggctc tcttctttat 1380
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taccatgaga tgctgaataa tgtacgggac ttcctaaaac tctatcagggt cccaaaaggc 1500
cttagtgagc gagtcatgga ttatatgtgc tcaacatggg ccatgtcaaa aggcattgat 1560
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gatgaggtgg tggctatattt aggggaaggg gatgtatttg gagacatctt ctggaaggaa 1860
accacccttg cccatgcatg tgcgaacgct cgggcactga cgtactgtga cctacacatc 1920
atcaagcggg aagccttgct caaagtcctg gacttttata cagcttttgc aaactccttc 1980
tcaaggaatc tcaactcttac ttgcaatctg aggaaacgga tcatctttcg taagatcagt 2040
gatgtgaaga aagaggagga ggagcgcctc cggcagaaga atgaggtgac cctcagcatt 2100
cccgtggacc acccagtcag aaagctcttc cagaagttca agcagcagaa ggagctgcgg 2160
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ataagaatga agaattgaaa tggaaaaggg tggctgcgac tcaagaataa tatgggagcc 2460
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gtaccccccc agataccatg tcaggatatt tttagtgtct caaggcctga atcacctgaa 2940
tctgacaaaag atgaaatcca cttttaa 2967

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<210> 7

<211> 1341

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1) ... (1338)

<400> 7

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tgc tgc gag cgg ctg gtg ctc aac gtg gcc ggg ctg cgc ttc gag acg 48
Cys Cys Glu Arg Leu Val Leu Asn Val Ala Gly Leu Arg Phe Glu Thr
1 5 10 15

```

```

cgg gcg cgc acg ctg ggc cgc ttc ccg gac act ctg cta ggg gac cca 96
Arg Ala Arg Thr Leu Gly Arg Phe Pro Asp Thr Leu Leu Gly Asp Pro
20 25 30

```

```

gcg cgc cgc ggc cgc ttc tac gac gac gcg cgc cgc gag tat ttc ttc 144
Ala Arg Arg Gly Arg Phe Tyr Asp Asp Ala Arg Arg Glu Tyr Phe Phe
35 40 45

```

```

gac cgg cac cgg ccc agc ttc gac gcc gtg ctc tac tac tac cag tcc 192
Asp Arg His Arg Pro Ser Phe Asp Ala Val Leu Tyr Tyr Tyr Gln Ser
50 55 60

```

```

ggg ggg cgg ctg cgg cgg ccg gcg cac gtg ccg ctc gac gtc ttc ctg 240
Gly Gly Arg Leu Arg Arg Pro Ala His Val Pro Leu Asp Val Phe Leu

```



65	70	75	80	
gaa gag gtg gcc ttc tac ggg ctg ggc gcg gcg gcc ctg gca cgc ctg				288
Glu Glu Val Ala Phe Tyr Gly Leu Gly Ala Ala Ala Leu Ala Arg Leu	85	90	95	
cgc gag gac gag ggc tgc ccg gtg ccg ccc gag cgc ccc ctg ccc cgc				336
Arg Glu Asp Glu Gly Cys Pro Val Pro Pro Glu Arg Pro Leu Pro Arg	100	105	110	
cgc gcc ttc gcc cgc cag ctg tgc ctg ctt ttc gag ttt ccc gag agc				384
Arg Ala Phe Ala Arg Gln Leu Cys Leu Leu Phe Glu Phe Pro Glu Ser	115	120	125	
tct cag gcc gcg cgc gtg ctc gcc gta gtc tcc gtg ctg gtc atc ctc				432
Ser Gln Ala Ala Arg Val Leu Ala Val Val Ser Val Leu Val Ile Leu	130	135	140	
gtc tcc atc gtc gtc ttc tgc ctc gag acg ctg cct gac ttc cgc gac				480
Val Ser Ile Val Val Phe Cys Leu Glu Thr Leu Pro Asp Phe Arg Asp	145	150	155	160
gac cgc gac ggc acg ggg ctt gct gct gca gcc gca gcc ggc ccg ttc				528
Asp Arg Asp Gly Thr Gly Leu Ala Ala Ala Ala Ala Gly Pro Phe	165	170	175	
ccc gct ccg ctg aat ggc tcc agc caa atg cct gga aat cca ccc cgc				576
Pro Ala Pro Leu Asn Gly Ser Ser Gln Met Pro Gly Asn Pro Pro Arg	180	185	190	
ctg ccc ttc aat gac ccg ttc ttc gtg gtg gag acg ctg tgt att tgt				624
Leu Pro Phe Asn Asp Pro Phe Phe Val Val Glu Thr Leu Cys Ile Cys	195	200	205	
tgg ttc tcc ttt gag ctg ctg gta cgc ctc ctg gtc tgt cca agc aag				672
Trp Phe Ser Phe Glu Leu Leu Val Arg Leu Leu Val Cys Pro Ser Lys	210	215	220	
gct atc ttc ttc aag aac gtg atg aac ctc atc gat ttt gtg gct atc				720
Ala Ile Phe Phe Lys Asn Val Met Asn Leu Ile Asp Phe Val Ala Ile	225	230	235	240
ctt ccc tac ttt gtg gca ctg ggc acc gag ctg gcc cgg cag cga ggg				768
Leu Pro Tyr Phe Val Ala Leu Gly Thr Glu Leu Ala Arg Gln Arg Gly	245	250	255	
gtg ggc cag cag gcc atg tca ctg gcc atc ctg aga gtc atc cga ttg				816
Val Gly Gln Gln Ala Met Ser Leu Ala Ile Leu Arg Val Ile Arg Leu	260	265	270	
gtg cgt gtc ttc cgc atc ttc aag ctg tcc cgg cac tca aag ggc ctg				864
Val Arg Val Phe Arg Ile Phe Lys Leu Ser Arg His Ser Lys Gly Leu	275	280	285	
caa atc ttg ggc cag acg ctt cgg gcc tcc atg cgt gag ctg ggc ctc				912
Gln Ile Leu Gly Gln Thr Leu Arg Ala Ser Met Arg Glu Leu Gly Leu	290	295	300	

ctc atc ttt ttc ctc ttc atc ggt gtg gtc ctc ttt tcc agc gcc gtc 960  
 Leu Ile Phe Phe Leu Phe Ile Gly Val Val Leu Phe Ser Ser Ala Val  
 305 310 315 320

tac ttt gcc gaa gtt gac cgg gtg gac tcc cat ttc act agc atc cct 1008  
 Tyr Phe Ala Glu Val Asp Arg Val Asp Ser His Phe Thr Ser Ile Pro  
 325 330 335

gag tcc ttc tgg tgg gcg gta gtc acc atg act aca gtt ggc tat gga 1056  
 Glu Ser Phe Trp Trp Ala Val Val Thr Met Thr Thr Val Gly Tyr Gly  
 340 345 350

gac atg gca ccc gtc act gtg ggt ggc aag ata gtg ggc tct ctg tgt 1104  
 Asp Met Ala Pro Val Thr Val Gly Gly Lys Ile Val Gly Ser Leu Cys  
 355 360 365

gcc att gcg ggc gtg ctg act att tcc ctg cca gtg ccc gtc att gtc 1152  
 Ala Ile Ala Gly Val Leu Thr Ile Ser Leu Pro Val Pro Val Ile Val  
 370 375 380

tcc aat ttc agc tac ttt tat cac cgg gag aca gag ggc gaa gag gct 1200  
 Ser Asn Phe Ser Tyr Phe Tyr His Arg Glu Thr Glu Gly Glu Glu Ala  
 385 390 395 400

ggg atg ttc agc cat gtg gac atg cag cct tgt ggc cca ctg gag ggc 1248  
 Gly Met Phe Ser His Val Asp Met Gln Pro Cys Gly Pro Leu Glu Gly  
 405 410 415

aag gcc aat ggg ggg ctg gtg gac ggg gag gta cct gag cta cca cct 1296  
 Lys Ala Asn Gly Gly Leu Val Asp Gly Glu Val Pro Glu Leu Pro Pro  
 420 425 430

cca ctc tgg gca ccc cca ggg aaa cac ctg gtc acc gaa gtg 1338  
 Pro Leu Trp Ala Pro Pro Gly Lys His Leu Val Thr Glu Val  
 435 440 445

tga 1341

<210> 8  
 <211> 446  
 <212> PRT  
 <213> Homo sapiens

<400> 8  
 Cys Cys Glu Arg Leu Val Leu Asn Val Ala Gly Leu Arg Phe Glu Thr  
 1 5 10 15  
 Arg Ala Arg Thr Leu Gly Arg Phe Pro Asp Thr Leu Leu Gly Asp Pro  
 20 25 30  
 Ala Arg Arg Gly Arg Phe Tyr Asp Asp Ala Arg Arg Glu Tyr Phe Phe  
 35 40 45  
 Asp Arg His Arg Pro Ser Phe Asp Ala Val Leu Tyr Tyr Tyr Gln Ser  
 50 55 60  
 Gly Gly Arg Leu Arg Arg Pro Ala His Val Pro Leu Asp Val Phe Leu  
 65 70 75 80  
 Glu Glu Val Ala Phe Tyr Gly Leu Gly Ala Ala Ala Leu Ala Arg Leu  
 85 90 95

Arg	Glu	Asp	Glu	Gly	Cys	Pro	Val	Pro	Pro	Glu	Arg	Pro	Leu	Pro	Arg
			100					105					110		
Arg	Ala	Phe	Ala	Arg	Gln	Leu	Cys	Leu	Leu	Phe	Glu	Phe	Pro	Glu	Ser
		115					120					125			
Ser	Gln	Ala	Ala	Arg	Val	Leu	Ala	Val	Val	Ser	Val	Leu	Val	Ile	Leu
		130					135					140			
Val	Ser	Ile	Val	Val	Phe	Cys	Leu	Glu	Thr	Leu	Pro	Asp	Phe	Arg	Asp
145						150					155				160
Asp	Arg	Asp	Gly	Thr	Gly	Leu	Ala	Ala	Ala	Ala	Ala	Ala	Gly	Pro	Phe
				165					170					175	
Pro	Ala	Pro	Leu	Asn	Gly	Ser	Ser	Gln	Met	Pro	Gly	Asn	Pro	Pro	Arg
			180					185					190		
Leu	Pro	Phe	Asn	Asp	Pro	Phe	Phe	Val	Val	Glu	Thr	Leu	Cys	Ile	Cys
		195					200					205			
Trp	Phe	Ser	Phe	Glu	Leu	Leu	Val	Arg	Leu	Leu	Val	Cys	Pro	Ser	Lys
		210				215					220				
Ala	Ile	Phe	Phe	Lys	Asn	Val	Met	Asn	Leu	Ile	Asp	Phe	Val	Ala	Ile
225					230					235					240
Leu	Pro	Tyr	Phe	Val	Ala	Leu	Gly	Thr	Glu	Leu	Ala	Arg	Gln	Arg	Gly
				245					250					255	
Val	Gly	Gln	Gln	Ala	Met	Ser	Leu	Ala	Ile	Leu	Arg	Val	Ile	Arg	Leu
			260					265					270		
Val	Arg	Val	Phe	Arg	Ile	Phe	Lys	Leu	Ser	Arg	His	Ser	Lys	Gly	Leu
		275					280					285			
Gln	Ile	Leu	Gly	Gln	Thr	Leu	Arg	Ala	Ser	Met	Arg	Glu	Leu	Gly	Leu
		290				295					300				
Leu	Ile	Phe	Phe	Leu	Phe	Ile	Gly	Val	Val	Leu	Phe	Ser	Ser	Ala	Val
305					310					315					320
Tyr	Phe	Ala	Glu	Val	Asp	Arg	Val	Asp	Ser	His	Phe	Thr	Ser	Ile	Pro
				325					330					335	
Glu	Ser	Phe	Trp	Trp	Ala	Val	Val	Thr	Met	Thr	Thr	Val	Gly	Tyr	Gly
			340					345					350		
Asp	Met	Ala	Pro	Val	Thr	Val	Gly	Gly	Lys	Ile	Val	Gly	Ser	Leu	Cys
		355					360					365			
Ala	Ile	Ala	Gly	Val	Leu	Thr	Ile	Ser	Leu	Pro	Val	Pro	Val	Ile	Val
		370				375					380				
Ser	Asn	Phe	Ser	Tyr	Phe	Tyr	His	Arg	Glu	Thr	Glu	Gly	Glu	Glu	Ala
385					390					395					400
Gly	Met	Phe	Ser	His	Val	Asp	Met	Gln	Pro	Cys	Gly	Pro	Leu	Glu	Gly
				405					410					415	
Lys	Ala	Asn	Gly	Gly	Leu	Val	Asp	Gly	Glu	Val	Pro	Glu	Leu	Pro	Pro
			420					425					430		
Pro	Leu	Trp	Ala	Pro	Pro	Gly	Lys	His	Leu	Val	Thr	Glu	Val		
		435					440					445			

&lt;210&gt; 9

&lt;211&gt; 223

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; consensus sequence

&lt;400&gt; 9

Ile	Leu	Phe	Ile	Leu	Asp	Leu	Leu	Phe	Val	Leu	Leu	Phe	Leu	Leu	Glu
1				5					10					15	
Ile	Val	Leu	Lys	Phe	Ile	Ala	Tyr	Gly	Leu	Lys	Ser	Thr	Ser	Asn	Ile

				20				25					30			
Ala	Ala	Lys	Tyr	Leu	Lys	Ser	Ile	Phe	Asn	Ile	Leu	Asp	Leu	Leu	Ala	
		35					40					45				
Ile	Leu	Pro	Leu	Leu	Leu	Leu	Leu	Val	Leu	Phe	Leu	Ser	Gly	Thr	Glu	
	50					55					60					
Gln	Val	Ala	Lys	Lys	Arg	Leu	Arg	Glu	Arg	Phe	Ser	Leu	Glu	Leu	Ser	
65					70					75					80	
Gln	Trp	Tyr	Tyr	Arg	Ile	Leu	Arg	Phe	Leu	Arg	Leu	Leu	Arg	Leu	Leu	
				85				90						95		
Arg	Leu	Leu	Arg	Leu	Leu	Arg	Leu	Leu	Arg	Arg	Leu	Glu	Thr	Leu	Phe	
			100					105					110			
Glu	Phe	Glu	Leu	Gly	Thr	Leu	Ala	Trp	Ser	Leu	Gln	Ser	Leu	Gly	Arg	
		115					120					125				
Ala	Leu	Lys	Ser	Ile	Leu	Arg	Phe	Leu	Leu	Leu	Leu	Leu	Leu	Leu	Leu	
		130				135					140					
Ile	Gly	Phe	Ser	Val	Ile	Gly	Tyr	Leu	Leu	Phe	Lys	Gly	Tyr	Glu	Asp	
145					150					155					160	
Leu	Ser	Glu	Asn	Glu	Val	Asp	Gly	Asn	Ser	Glu	Phe	Ser	Ser	Tyr	Phe	
				165				170						175		
Asp	Ala	Phe	Tyr	Phe	Leu	Phe	Val	Thr	Leu	Thr	Thr	Val	Gly	Phe	Gly	
			180					185					190			
Asp	Leu	Val	Pro	Val	Trp	Leu	Gly	Ile	Ile	Phe	Phe	Val	Leu	Phe	Phe	
		195					200					205				
Ile	Ile	Val	Gly	Leu	Leu	Leu	Leu	Asn	Leu	Leu	Ile	Ala	Val	Ile		
	210					215					220					

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<210> 10
<211> 120
<212> PRT
<213> Artificial Sequence
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<220>  
<223> consensus sequence

<400> 10															
Ala	Leu	Glu	Glu	Arg	Ser	Tyr	Pro	Ala	Gly	Glu	Val	Ile	Ile	Arg	Gln
1				5					10					15	
Gly	Asp	Pro	Gly	Asp	Ser	Phe	Tyr	Ile	Val	Leu	Ser	Gly	Glu	Val	Glu
			20					25					30		
Val	Tyr	Lys	Leu	Thr	Glu	Asp	Gly	Ala	Arg	Thr	Pro	Glu	Val	Ser	Gln
		35					40					45			
Lys	Gln	Asp	Thr	Arg	Glu	Gln	Val	Val	Ala	Thr	Leu	Gly	Pro	Gly	Asp
	50					55					60				
Phe	Phe	Gly	Glu	Leu	Ala	Leu	Leu	Thr	Asn	Asp	Gly	Asn	Lys	Asn	Ala
65					70					75					80
Val	Leu	Pro	Ser	Leu	Asp	Gln	Gly	Ala	Pro	Arg	Thr	Ala	Thr	Val	Arg
				85					90					95	
Ala	Leu	Thr	Asp	Ser	Glu	Leu	Leu	Arg	Leu	Asp	Arg	Glu	Asp	Phe	Arg
			100					105					110		
Arg	Leu	Leu	Gln	Lys	Tyr	Pro	Glu								
		115					120								

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<210> 11
<211> 111
<212> PRT
<213> Artificial Sequence
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&lt;220&gt;

&lt;223&gt; consensus sequence

&lt;400&gt; 11

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Glu Arg Val Arg Leu Asn Val Gly Gly Lys Arg Phe Glu Thr Ser Lys
 1           5           10           15
Ser Thr Leu Thr Arg Phe Lys Pro Asp Thr Leu Leu Gly Arg Leu Leu
      20           25           30
Lys Thr Asp Ser Asp Val His Glu Ala Arg Leu Arg Leu Cys Asp Phe
      35           40           45
Tyr Asp Asp Glu Thr Gly Glu Tyr Phe Phe Asp Arg Ser Pro Lys His
      50           55           60
Phe Glu Thr Ile Leu Asn Phe Tyr Arg Thr Gly Asp Gly Lys Leu His
      65           70           75           80
Arg Pro Glu Val Cys Leu Asp Ser Phe Leu Glu Glu Leu Glu Phe Tyr
      85           90           95
Gly Leu Asp Glu Leu Ala Ile Glu Ser Cys Cys Glu Asp Glu Tyr
      100           105           110

```

&lt;210&gt; 12

&lt;211&gt; 988

&lt;212&gt; PRT

&lt;213&gt; Rattus norvegicus

&lt;400&gt; 12

```

Met Pro Gly Gly Lys Arg Gly Leu Val Ala Pro Gln Asn Thr Phe Leu
 1           5           10           15
Glu Asn Ile Val Arg Arg Ser Ser Glu Ser Ser Phe Leu Leu Gly Asn
      20           25           30
Ala Gln Ile Val Asp Trp Pro Val Val Tyr Ser Asn Asp Gly Phe Cys
      35           40           45
Lys Leu Ser Gly Tyr His Arg Ala Asp Val Met Gln Lys Ser Ser Thr
      50           55           60
Cys Ser Phe Met Tyr Gly Glu Leu Thr Asp Lys Lys Thr Ile Glu Lys
      65           70           75           80
Val Arg Gln Thr Phe Asp Asn Tyr Glu Ser Asn Cys Phe Glu Val Leu
      85           90           95
Leu Tyr Lys Lys Asn Arg Thr Pro Val Trp Phe Tyr Met Gln Ile Ala
      100           105           110
Pro Ile Arg Asn Glu His Glu Lys Val Val Leu Phe Leu Cys Thr Phe
      115           120           125
Lys Asp Ile Thr Leu Phe Lys Gln Pro Ile Glu Asp Asp Ser Thr Lys
      130           135           140
Gly Trp Thr Lys Phe Ala Arg Leu Thr Arg Ala Leu Thr Asn Ser Arg
      145           150           155           160
Ser Val Leu Gln Gln Leu Thr Pro Met Asn Lys Thr Glu Thr Val His
      165           170           175
Lys His Ser Arg Leu Ala Glu Val Leu Gln Leu Gly Ser Asp Ile Leu
      180           185           190
Pro Gln Tyr Lys Gln Glu Ala Pro Lys Thr Pro Pro His Ile Ile Leu
      195           200           205
His Tyr Cys Ala Phe Lys Thr Thr Trp Asp Trp Val Ile Leu Ile Leu
      210           215           220
Thr Phe Tyr Thr Ala Ile Met Val Pro Tyr Asn Val Ser Phe Lys Thr
      225           230           235           240
Lys Gln Asn Asn Ile Ala Trp Leu Val Leu Asp Ser Val Val Asp Val
      245           250           255

```

Ile Phe Leu Val Asp Ile Val Leu Asn Phe His Thr Thr Phe Val Gly  
 260 265 270  
 Pro Gly Gly Glu Val Ile Ser Asp Pro Lys Leu Ile Arg Met Asn Tyr  
 275 280 285  
 Leu Lys Thr Trp Phe Val Ile Asp Leu Leu Ser Cys Leu Pro Tyr Asp  
 290 295 300  
 Ile Ile Asn Ala Phe Glu Asn Val Asp Glu Gly Ile Ser Ser Leu Phe  
 305 310 315 320  
 Ser Ser Leu Lys Val Val Arg Leu Leu Arg Leu Gly Arg Val Ala Arg  
 325 330 335  
 Lys Leu Asp His Tyr Leu Glu Tyr Gly Ala Ala Val Leu Val Leu Leu  
 340 345 350  
 Val Cys Val Phe Gly Leu Val Ala His Trp Leu Ala Cys Ile Trp Tyr  
 355 360 365  
 Ser Ile Gly Asp Tyr Glu Val Ile Asp Glu Val Thr Asn Thr Ile Gln  
 370 375 380  
 Ile Asp Ser Trp Leu Tyr Gln Leu Ala Leu Ser Ile Arg Thr Pro Tyr  
 385 390 395 400  
 Arg Tyr Asn Thr Ser Ala Gly Ile Trp Glu Gly Gly Pro Ser Lys Asp  
 405 410 415  
 Ser Leu Tyr Val Ser Ser Leu Tyr Phe Thr Met Thr Ser Leu Thr Thr  
 420 425 430  
 Ile Gly Phe Gly Asn Ile Ala Pro Thr Thr Asp Val Glu Lys Met Phe  
 435 440 445  
 Ser Val Ala Met Met Met Val Gly Ser Leu Leu Tyr Ala Thr Ile Phe  
 450 455 460  
 Gly Asn Val Thr Thr Ile Phe Gln Gln Met Tyr Ala Asn Thr Asn Arg  
 465 470 475 480  
 Tyr His Glu Met Leu Asn Asn Val Arg Asp Phe Leu Lys Leu Tyr Gln  
 485 490 495  
 Val Pro Lys Gly Leu Ser Glu Arg Val Met Asp Tyr Ile Val Ser Thr  
 500 505 510  
 Trp Ser Met Ser Lys Gly Ile Asp Thr Glu Lys Val Leu Ser Ile Cys  
 515 520 525  
 Pro Lys Asp Met Arg Ala Asp Ile Cys Val His Leu Asn Arg Lys Val  
 530 535 540  
 Phe Asn Glu His Pro Ala Phe Arg Leu Ala Ser Asp Gly Cys Leu Arg  
 545 550 555 560  
 Ala Leu Ala Val Glu Phe Gln Thr Ile His Cys Ala Pro Gly Asp Leu  
 565 570 575  
 Ile Tyr His Ala Gly Glu Ser Val Asp Ala Leu Cys Phe Val Val Ser  
 580 585 590  
 Gly Ser Leu Glu Val Ile Gln Asp Glu Glu Val Val Ala Ile Leu Gly  
 595 600 605  
 Lys Gly Asp Val Phe Gly Asp Ile Phe Trp Lys Glu Thr Thr Leu Ala  
 610 615 620  
 His Ala Cys Ala Asn Val Arg Ala Leu Thr Tyr Cys Asp Leu His Ile  
 625 630 635 640  
 Ile Lys Arg Glu Ala Leu Leu Lys Val Leu Asp Phe Tyr Thr Ala Phe  
 645 650 655  
 Ala Asn Ser Phe Ser Arg Asn Leu Thr Leu Thr Cys Asn Leu Arg Lys  
 660 665 670  
 Arg Ile Ile Phe Arg Lys Ile Ser Asp Val Lys Lys Glu Glu Glu Glu  
 675 680 685  
 Arg Leu Arg Gln Lys Asn Glu Val Thr Leu Ser Ile Pro Val Asp His  
 690 695 700  
 Pro Val Arg Lys Leu Phe Gln Lys Phe Lys Gln Gln Lys Glu Leu Arg

705					710					715					720
Asn	Gln	Gly	Ser	Ala	Gln	Ser	Asp	Pro	Glu	Arg	Ser	Gln	Leu	Gln	Val
				725					730					735	
Glu	Ser	Arg	Pro	Leu	Gln	Asn	Gly	Ala	Ser	Ile	Thr	Gly	Thr	Ser	Val
			740					745					750		
Val	Thr	Val	Ser	Gln	Ile	Thr	Pro	Ile	Gln	Thr	Ser	Leu	Ala	Tyr	Val
		755					760					765			
Lys	Thr	Ser	Glu	Thr	Leu	Lys	Gln	Asn	Asn	Arg	Asp	Ala	Met	Glu	Leu
	770					775					780				
Lys	Pro	Asn	Gly	Gly	Ala	Glu	Pro	Lys	Cys	Leu	Lys	Val	Asn	Ser	Pro
785					790					795					800
Ile	Arg	Met	Lys	Asn	Gly	Asn	Gly	Lys	Gly	Trp	Leu	Arg	Leu	Lys	Asn
			805						810					815	
Asn	Met	Gly	Ala	His	Glu	Glu	Lys	Lys	Glu	Glu	Trp	Asn	Asn	Val	Thr
		820						825					830		
Lys	Ala	Glu	Ser	Met	Gly	Leu	Leu	Ser	Glu	Asp	Pro	Lys	Gly	Ser	Asp
	835					840						845			
Ser	Glu	Asn	Ser	Val	Thr	Lys	Asn	Pro	Leu	Arg	Lys	Thr	Asp	Ser	Cys
	850					855					860				
Asp	Ser	Gly	Ile	Thr	Lys	Ser	Asp	Leu	Arg	Leu	Asp	Lys	Ala	Gly	Glu
865					870				875						880
Ala	Arg	Ser	Pro	Leu	Glu	His	Ser	Pro	Ser	Gln	Ala	Asp	Ala	Lys	His
			885					890						895	
Pro	Phe	Tyr	Pro	Ile	Pro	Glu	Gln	Ala	Leu	Gln	Thr	Thr	Leu	Gln	Glu
	900						905						910		
Val	Lys	His	Glu	Leu	Lys	Glu	Asp	Ile	Gln	Leu	Leu	Ser	Cys	Arg	Met
	915					920						925			
Thr	Ala	Leu	Glu	Lys	Gln	Val	Ala	Glu	Ile	Leu	Lys	Leu	Leu	Ser	Glu
	930				935						940				
Lys	Ser	Val	Pro	Gln	Thr	Ser	Ser	Pro	Lys	Pro	Gln	Ile	Pro	Leu	Gln
945					950				955						960
Val	Pro	Pro	Gln	Ile	Pro	Cys	Gln	Asp	Ile	Phe	Ser	Val	Ser	Arg	Pro
			965					970						975	
Glu	Ser	Pro	Glu	Ser	Asp	Lys	Asp	Glu	Ile	Asn	Phe				
			980					985							

&lt;210&gt; 13

&lt;211&gt; 532

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 13

Met	Thr	Thr	Arg	Lys	Ala	Gln	Glu	Ile	His	Gly	Lys	Ala	Pro	Gly	Gly
1				5					10					15	
Ser	Val	Ser	Thr	Gly	Val	Gly	Thr	Ala	Glu	Gly	Ala	Pro	Ser	Pro	Ala
			20					25				30			
Gly	Val	Thr	Pro	Pro	Pro	Pro	Pro	Arg	Pro	Gly	Arg	Thr	Phe	His	Ala
	35					40					45				
Ile	Phe	Thr	Arg	Arg	His	Arg	Thr	Pro	Asp	Trp	Gly	Gly	Cys	Gly	Val
	50				55				60						
Gly	Ala	Thr	Arg	Pro	Phe	Thr	Gly	Arg	Pro	Gly	Cys	Ala	Arg	His	Gly
65					70				75					80	
Ala	Thr	Val	Pro	Ala	Ala	Leu	Arg	Cys	Cys	Glu	Arg	Leu	Val	Leu	Asn
			85					90					95		
Val	Ala	Gly	Leu	Arg	Phe	Glu	Thr	Arg	Ala	Arg	Thr	Leu	Gly	Arg	Phe
			100					105				110			
Pro	Asp	Thr	Leu	Leu	Gly	Asp	Pro	Val	Arg	Arg	Ser	Arg	Phe	Tyr	Asp

115 120 125  
 Gly Ala Arg Ala Glu Tyr Phe Phe Asp Arg His Arg Pro Ser Phe Asp  
 130 135 140  
 Ala Val Leu Tyr Tyr Tyr Gln Ser Gly Gly Arg Leu Arg Arg Pro Ala  
 145 150 155 160  
 His Val Pro Leu Asp Val Phe Leu Glu Glu Val Ser Phe Tyr Gly Leu  
 165 170 175  
 Gly Arg Arg Leu Ala Arg Leu Arg Glu Asp Glu Gly Cys Ala Val Ala  
 180 185 190  
 Glu Arg Pro Leu Pro Pro Pro Phe Ala Arg Gln Leu Trp Leu Leu Phe  
 195 200 205  
 Glu Phe Pro Glu Ser Ser Gln Ala Ala Arg Val Leu Ala Val Val Ser  
 210 215 220  
 Val Leu Val Ile Leu Val Ser Ile Val Val Phe Cys Leu Glu Thr Leu  
 225 230 235 240  
 Pro Asp Phe Arg Asp Asp Arg Asp Asp Pro Gly Leu Ala Pro Val Ala  
 245 250 255  
 Ala Ala Thr Gly Ser Phe Leu Ala Arg Leu Asn Gly Ser Ser Pro Met  
 260 265 270  
 Pro Gly Ala Pro Pro Arg Gln Pro Phe Asn Asp Pro Phe Phe Val Val  
 275 280 285  
 Glu Thr Leu Cys Ile Cys Trp Phe Ser Phe Glu Leu Leu Val His Leu  
 290 295 300  
 Val Ala Cys Pro Ser Lys Ala Val Phe Phe Lys Asn Val Met Asn Leu  
 305 310 315 320  
 Ile Asp Phe Val Ala Ile Leu Pro Tyr Phe Val Ala Leu Gly Thr Glu  
 325 330 335  
 Leu Ala Arg Gln Arg Gly Val Gly Gln Pro Ala Met Ser Leu Ala Ile  
 340 345 350  
 Leu Arg Val Ile Arg Leu Val Arg Val Phe Arg Ile Phe Lys Leu Ser  
 355 360 365  
 Arg His Ser Lys Gly Leu Gln Ile Leu Gly Gln Thr Leu Arg Ala Ser  
 370 375 380  
 Met Arg Glu Leu Gly Leu Leu Ile Phe Phe Leu Phe Ile Gly Val Val  
 385 390 395 400  
 Leu Phe Ser Ser Ala Val Tyr Phe Ala Glu Val Asp Arg Val Asp Thr  
 405 410 415  
 His Phe Thr Ser Ile Pro Glu Ser Phe Trp Trp Ala Val Val Thr Met  
 420 425 430  
 Thr Thr Val Gly Tyr Gly Asp Met Ala Pro Val Thr Val Gly Gly Lys  
 435 440 445  
 Ile Val Gly Ser Leu Cys Ala Ile Ala Gly Val Leu Thr Ile Ser Leu  
 450 455 460  
 Pro Val Pro Val Ile Val Ser Asn Phe Ser Tyr Phe Tyr His Arg Glu  
 465 470 475 480  
 Thr Glu Gly Glu Glu Ala Gly Met Tyr Ser His Val Asp Thr Gln Pro  
 485 490 495  
 Cys Gly Thr Leu Glu Gly Lys Ala Asn Gly Gly Leu Val Asp Ser Glu  
 500 505 510  
 Val Pro Glu Leu Leu Pro Pro Leu Trp Pro Pro Ala Gly Lys His Met  
 515 520 525  
 Val Thr Glu Val  
 530